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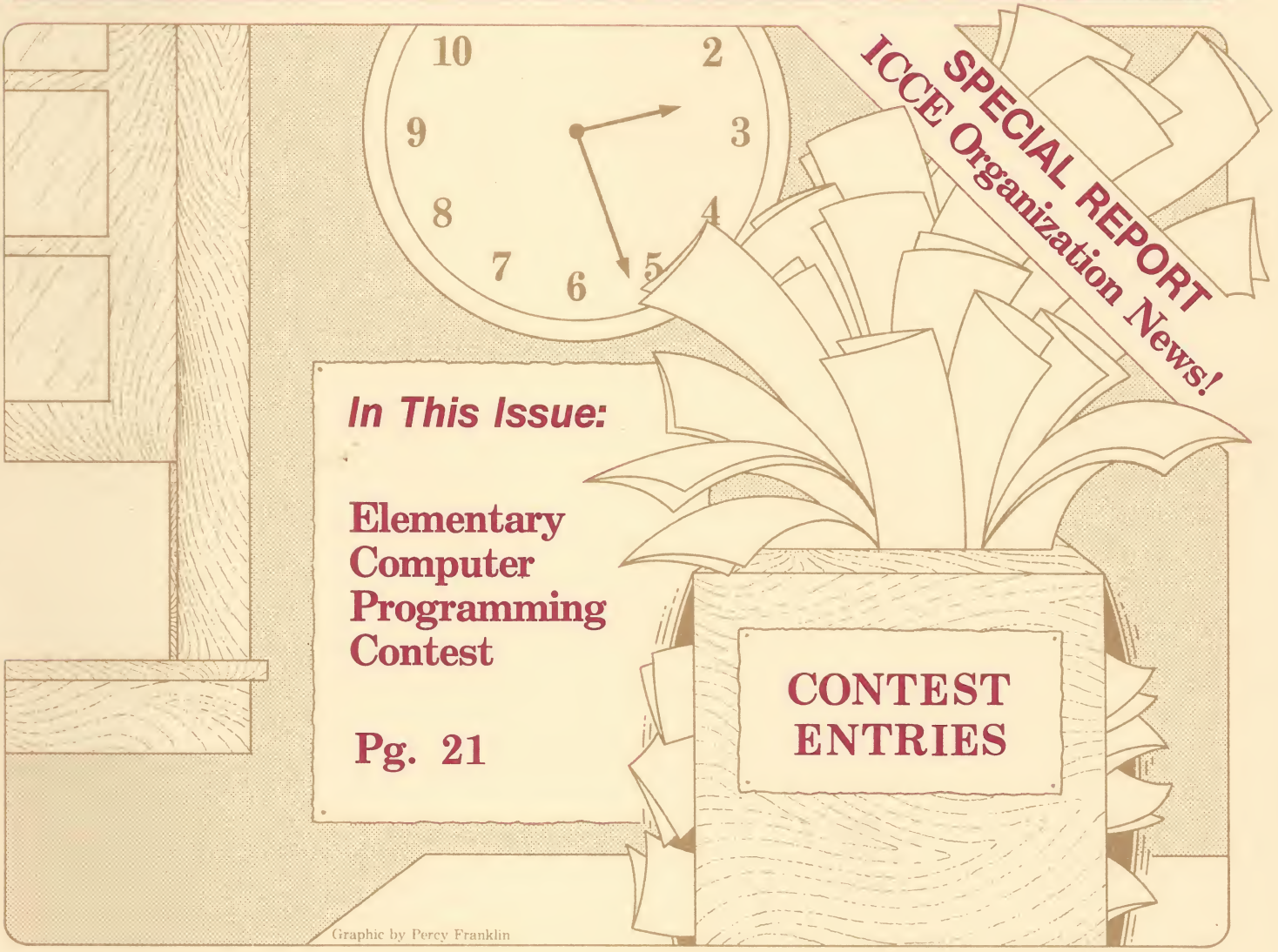

The Journal of The International Council for Computers in Education

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Education Through Entertainment:
An Approach to Computer Instruction in the Elementary Schools

by
Michael Bigelow Dixon and Alison King

"They calculate, they diagnose/
They pick the winner when it's close/
They plan the flights of rocket ships/
Or families on vacation trips/
When to sell and when to pay/
Who will win election day/
How to help an athlete's form/
How to make a cold room warm/
They're used on farms/in banks/and schools/
They're used in building swimming pools!

They map the planets and the stars/
They use them for designing cars/
They print newspapers/magazines/
Set the routes for submarines/
Figure out when planes should land/
Routines for a marching band/
Where police should look for crooks/
Recipes a gourmet cooks/
When to harvest this year's hay/
How to pitch to Reggie "J."!

(Refrain)
Get your computer right away,
Don't you wait another day,
It's for sure they're here to stay,
Let us help you buy today!

Thus begins South Coast Repertory's *Bits & Bytes,* an original musical play about children and computers. From January through June of 1983, more than 60,000 children from San Diego to Los Angeles saw the play.

How did this come about? Each year SCR introduces children in grades K-8 to professional theatre while presenting a play on a subject of topical interest to students and educators. SCR's annual Educational Touring Productions are written, directed, designed and acted by members of the artistic company at SCR, a professional resident theatre in Orange County, CA. Past touring productions have included: *Tomato Surprise* (nutrition), *The Fitness Game!* (physical fitness), *The Energy Show* (energy conservation), and *Art, For Pete's Sake* (performing arts).

"Computers" was selected as the topic of SCR's 1983 Educational Touring Production in response to numerous requests from educators. In a survey of schools that had booked SCR's previous productions, principals, teachers and parents overwhelmingly selected "computer literacy."

An indispensable research tool was made available to SCR when Texas Instruments donated a TI 99/4A home computer with monitor, speech synthesizer, disc drive, peripheral expansion unit, manuals and software. The TI 99/4A was also used in the set of the touring production and was a particular asset at some of the inner city and rural schools where children had not yet seen or worked with computers.

As with each of the past thirteen SCR Educational Touring Productions, there arose in the early stages of script development a strong confrontation between educational content and the need for an entertaining style of presentation. This conflict was particularly complex with *Bits & Bytes* because writing a play about computers can be like writing a play about bicycles, typewriters or telephones. Machine theater is impossible; drama is about characters in conflict expressed through their challenged beliefs and changing emotions. Computers, as our research revealed, have neither.

What about the instructional content of the play? It was clear that *Bits & Bytes* was to serve as a vehicle for teaching certain basic facts and concepts about computers. In addition, however, the script (which underwent five drafts from July through December of 1982) was strongly influenced by four philosophical points we felt essential for presenting the "truth" about the computer revolution to those who would be most profoundly affected by it—the children. Each of these points was substantiated by our research, though opposing arguments for some or all of the following were also encountered.

First, we declined to anthropomorphize the computer as is done in so many science fiction films and television shows. Though powerfully entertaining, such science fiction does not prepare children for the encounters they will have with computers.

Second, computers do not "think"—they merely execute the programs that are electronically recorded in their circuitry. We chose to define "thinking" as a human capability that combines logical thought processes (which computers do replicate) with the uniquely human traits of intuition and emotion.

The computer's limitations are as important in *Bits & Bytes* as the computer's speed, computing

abilities and information storage capacity (which is not like human memory at all!). Thus our third aim in the play was to demonstrate how computers will never replace human beings, especially in the areas of original thinking and human relationships. The intended outcome of this particular emphasis in the script is to create a strong and positive self-image for children.

Our fourth and final goal for the play was to show how computers can assist humans in their efforts to help humankind and to achieve personal goals. The play concludes on this positive note of human-and-computer teams by describing how modern computer technology has improved the possibilities for new human achievement and happiness.

(Sung by a Typewriter, Adding Machine and Filing Cabinet:)

An older cuss
Might remember us
And all the jobs we used to do for you
I'd add, subtract, (Adding Machine)
I'd file your facts, (Filing Cabinet)
I'd type all your letters and your news.
(Typewriter)

(Indicating Computer)
Now it adds, subtracts,
Types, stores facts,
As long as you can put in the right clues.
It won't complain,
A perfect brain,
Performing any function that you choose.

Work it night and day,
Without pay,
It's quiet and it never calls in sick.
It does the work,
Of twenty office clerks,
Without mistakes and twice as quick.

So we're antique,
Even as we speak,
Victims of progress, we suppose.
Last year's smash,
Is this year's trash,
And that's the way technology goes!

However, we also wanted to communicate certain basic information about computers that was independent of our viewpoint. Those areas that seemed most rudimentary to an understanding of computer technology for children included: the hardware (peripherals), software (problem-solving and games programs), computer languages, programming, bugs and the actual working manner of the computer.

Having agreed on these basics, we set out to solve the problems of how to make *Bits & Bytes* entertaining, dramatic and theatrical. Our solution was to set the play in Computer-rama, a high-tech computer store, where a gigantic computerized wall-display would help the salespeople sell "tough customers." Next, we invited a "tough customer," a rather frivolous young girl named Happy who cares nothing about computers. The dramatic action of the play has the super-salesman, Morton B. Norton, teach Happy (and hence the children in the audience) how the computer could solve "all" her problems. He is aided by two assistants, Bits and Bytes, who have terrific memories.

In an outrageous effort to make this sale, Bits and Bytes dress up as eccentric, computer, cartoon-like characters: the Bugs Brothers; Mr. (Silicon) Chips; a typewriter, adding machine and file cabinet; and life-size video-game characters. The educational content of their various pitches is made palatable and entertaining by presenting it in various musical and poetic styles ranging from punk and new wave to classical and limericks.

MR. CHIPS: I can give you a quick introduction.
And some bits of computer instruction.
With a few simple rules,
You can use all the tools,
Of this marvelous thinking construction.

HAPPY: Who are you and what do you do?

MR. CHIPS: I'm a microchip made out of glue
We're baked, just like tarts,
With the ingredient smarts,
We solve problems you ask us to.

I'm inside that little machine.
Remembering facts that I've seen.
It's my routine task,
To get what you ask,
And flash up the news on the screen.

The show lasts approximately 45 minutes and can be performed either indoors or outside. The only requirement of the set is an electrical (110 volt) outlet nearby. The space requirements are kept to a minimum to facilitate performance of the play in hospitals, classrooms, auditoriums and cafeterias: 15' deep by 20' wide by 8' high to accommodate both the scenery and playing area.

Bits & Bytes and the 1983 SCR Educational Touring Program was made possible in part by a grant from Mervyn's—The Dayton Hudson Foundation.

[For more information, contact South Coast Repertory, P.O. Box 2197, Costa Mesa, CA 92626. Scripts are available from Pioneer Drama Service, P.O. Box 22555, Denver, CO 80222.] END■

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